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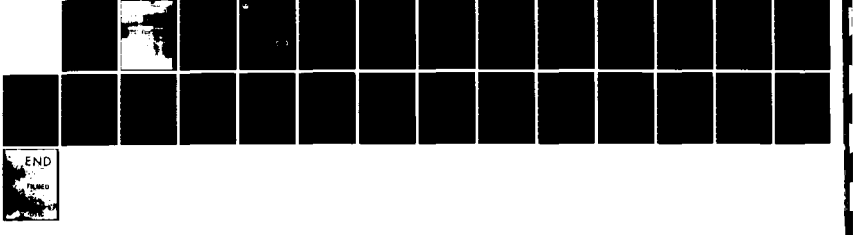

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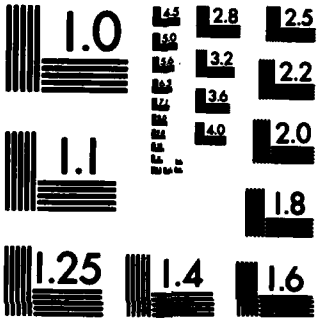

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This predictive validation study was conducted to evaluate the effectiveness of the operational Armed Services Vocational Aptitude Battery (ASVAB) selector composite against Cryptologic Technician Technical "A" school performance and to investigate the possible use of alternative ASVAB composites. Correlational and expectancy analyses results indicated that the current ASVAB selector composite was the best predictor of performance.

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Subj: Manpower and Personnel Laboratory Technical Note 84-1

Encl: (1) MPL TN 84-1, "Validation of Armed Services Vocational Aptitude Battery (ASVAB) in Cryptologic Technician Technical (CTT) "A" School," by Stephanie Booth-Kewley

1. Enclosure (1) describes a predictive validation study conducted for CTT "A" school. The ASVAB composite currently used to select students was evaluated and compared to alternate ASVAB composites. The operational ASVAB selector composite was found to be the best predictor of CTT school performance; consequently, it was recommended that this selector be retained.

2. The work reported in enlosure (1) is part of a continuing program to evaluate the effectiveness of measures used in the assignment of recruits to Navy schools and to establish standards for school entry (see also NPRDC TR 84-22).

3. The report is being distributed to document work of interest to Navy offices and researchers concerned with similar operational and methodological issues.

Martin F. Wiskoff

MARTIN F. WISKOFF
Director
Manpower and Personnel Laboratory

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This study was conducted within work unit WRB2708 (Armed Services Vocational Aptitude Battery, document number NO01184 WRB2708) and sponsored by the Chief of Naval Operations (OP-135).

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VALIDATION OF ARMED SERVICES VOCATIONAL APTITUDE BATTERY (ASVAB) IN CRYPTOLOGIC TECHNICIAN TECHNICAL (CTT) "A" SCHOOL

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SUMMARY

Problem

The Armed Services Vocational Aptitude Battery (ASVAB) is used in the selection and initial assignment of recruits to Navy schools or on-the-job training. ASVAB Forms 8, 9, and 10, which became operational in October 1980, have not yet been validated for any of the cryptologic technician "A" schools.

Objective

The objective of the current study was to examine the effectiveness of the operational ASVAB selector composite (VE + AR) and alternate composites for predicting performance in Cryptologic Technician Technical (CTT) "A" school.

Approach

The sample consisted of 134 students who attended the CTT "A" school at Pensacola, Florida, between July 1982 and June 1983. Sample sizes used for various analyses fluctuated widely because of missing data.

Pearson product-moment correlations between the predictors--ASVAB tests, ASVAB composites, and the Radio Code Aptitude Test (RCAT)--and the criteria were computed and corrected for range restriction. Final school grade (FSG) was the primary criterion of school performance. Additional performance criteria consisted of days to graduate (DAYS), final status code (FINSTAT--designated whether the student graduated from or dropped the course), the number of times the student was seen by a preventative counselor (TSBPC), and the number of times the student was assigned remediation (TAR). Scores on nine class-administered tests were supplementary criterion measures. Multiple correlations between ASVAB tests and each criterion were calculated using a stepwise regression procedure.

Expectancy tables were constructed for the operational composite, as well as for some alternate composites that appeared promising.

Results

The operational selector composite is a fairly good predictor of FSG, but a poor predictor of DAYS, FINSTAT, TSBPC, and TAR. However, for each criterion except TAR, none of the ASVAB predictors is significantly more valid than VE + AR, the operational composite. It is only moderately predictive of scores on the nine class-administered tests.

RCAT has a high correlation with FSG, but this result is based on a small sample size and should probably be regarded as spurious. In addition, RCAT has low correlations with the other criteria.

A comparison of expectancy analyses results for the operational composite and three other promising experimental composites revealed that using alternate

composites results in nearly the same rate of students dropped for academic reasons (27%-30%) as occurs with VE + AR (29%).

Conclusion and Recommendation

The correlational and expectancy analyses indicated that changing the CTT selector composite would not reduce academic attrition. Therefore, the operational CTT composite (VE + AR = 97) should be retained as the ASVAB selector composite for CTT "A" school.

CONTENTS

TABLES

INTRODUCTION

Problem

The Armed Services Vocational Aptitude Battery (ASVAB) is used in the selection and initial assignment of recruits to Navy schools or on-the-job training. ASVAB Forms 8, 9, and 10, which became operational in October 1980, have not yet been validated for any of the cryptologic technician Class "A" schools.

Background

When the ASVAB (Forms 5, 6, and 7) initially went into operation in January 1976, the selector composite used to determine eligibility for Cryptologic Technician Technical (CTT) "A" school (CDP 6302) consisted of the sum of two ASVAB tests: arithmetic reasoning (AR) and word knowledge (WK). In addition, the Radio Code Aptitude Test (RCAT) was used in determining eligibility for the school. When ASVAB Forms 8, 9, and 10 became operational in October 1980, a selector composite (VE) that summed the verbal score (WK + PC--the paragraph comprehension test) with the arithmetic reasoning (AR) test replaced WK + AR. The RCAT continued to be used until April 1982. Presently, VE + AR continues to be used, with a cutting score of 97, as the selector composite for CTT "A" school.

Purpose

The purpose of the study reported here was to examine the effectiveness of the operational ASVAB selector composite and of various alternate composites for predicting performance in (CTT) "A" school (CDP 6302). Validation studies of the other cryptologic technician "A" schools will be conducted when sufficient data are collected.

APPROACH

Predictors

The primary predictor variables for the present study were derived from ASVAB Forms 8, 9, and 10. The predictor variables consisted of scores from the 10 ASVAB tests comprising these forms (described in Table 1), the VE score, the Armed Forces Qualification Test (AFQT) composite score, the 12 selector composites currently in use by the Navy, 25 experimental composites (shown in the third column of Tables 2 through 6), and the RCAT score.

Criteria

Final school grade (FSG) was used as the primary criterion of CTT "A" school performance. Additional performance criteria were days to graduate (DAYS) and final status (FINSTAT), which designated whether the student graduated from the course. Graduates were assigned a code of 1 and academic drops

were assigned a code of 0. (Nonacademic drops were not included in the FINSTAT analysis.) Two other criterion measures were the number of times the student was seen by a preventative counselor (TSBPC), and the number of times the student was assigned remediation (TAR), when the student was required to spend time studying outside classroom hours. Negative correlations were expected for the DAYS, TSBPC, and TAR criteria because a shorter time and fewer academic problems were expected for high-ability students. Supplementary criterion measures included scores on five class-administered Morse code tests and four class-administered tests covering general course content.

Sample

The sample consisted of 134 students who attended the CTT "A" school at Pensacola, Florida, between July 1982 and June 1983. Because of missing data, sample sizes for the various analyses fluctuated widely, from 18 to 134, with most analyses using a sample of 92.

Table 1

Content of ASVAB Tests, Forms 8, 9, and 10

Test	Abbreviation	Description
General science	GS	A 25-item test of knowledge of the physical (13 items) and biological (12 items) sciences--11 minutes.
Arithmetic reasoning	AR	A 30-item test of ability to solve arithmetic word problems--36 minutes.
Word knowledge	WK	A 35-item test of knowledge of vocabulary, using words embedded in sentences (11 items) and synonyms (24 items)--11 minutes.
Paragraph comprehension	PC	A 15-item test of reading comprehension--13 minutes.
Numerical operations	NO	A 50-item speeded test of ability to add, subtract, multiply, and divide one-digit and two-digit numbers--3 minutes.
Coding speed	CS	An 84-item speeded test of ability to recognize numbers associated with words from a table--7 minutes.
Auto and shop information	AS	A 25-item test of knowledge of automobiles, shop practices, and use of tools--11 minutes.
Mathematics knowledge	MK	A 25-item test of knowledge of algebra, geometry, fractions, decimals, and exponents--24 minutes.
Mechanical comprehension	MC	A 25-item test of knowledge of mechanical and physical principles--19 minutes.
Electronics information	EI	A 20-item test of knowledge of electronics, radio and electrical principles and information--9 minutes.

Data Analyses

Pearson product-moment correlations between the predictors and the criteria were computed. The validity coefficients were corrected for either direct or indirect restriction of range, as appropriate (Thorndike, 1949, pp. 173-174), to reflect the coefficients that would be obtained for a sample representing the full range of ability of Navy recruits. The population statistics used for the corrections were based on a group of 66,459 regular Navy recruits who entered the Navy from July 1981 through May 1982.

For each criterion measure, the uncorrected and corrected validity coefficients of the operational school selector composite (VE + AR) were compared with the validity coefficients of the other current Navy and experimental composites. Whenever any of the latter composites appeared to be more valid than the operational selector composite, the differences between the uncorrected validity coefficients were tested for significance (Johnson, 1949, p. 87).

Multiple correlations (Rs) between ASVAB test scores and each criterion measure were calculated using a standard stepwise regression technique (forward inclusion) in which the order of inclusion of test predictors is determined by the contribution of each predictor to the variance accounted for at each step. The VE score was used instead of WK and PC scores separately in the multiple regression analyses.

Expectancy tables were constructed for the operational composite, as well as for some alternate composites that appeared promising. The population values used for these tables were based on the sample of 66,459 recruits that was used for correcting validity coefficients for range restriction.

RESULTS

Correlational Analyses

The bivariate and multiple correlation coefficients of ASVAB tests and selector composites with FSG, DAYS, FINSTAT, TSBPC, and TAR are presented in Tables 2 through 6.[1] As shown in Table 2, the operational composite (VE + AR) is moderately predictive of FSG; the uncorrected and corrected validity coefficients are .40 and .50 respectively. Although many of the other current Navy and experimental composites have higher correlations with FSG than does VE + AR (some as high as .50 uncorrected and .57 corrected), none is significantly more valid than the operational composite.

The multiple correlation for predicting FSG based on four tests is .55. A comparison of this correlation with the validity coefficients of the selector composites reveals that it is only .05 correlation points higher than the high-

[1]All tables referred to in Results may be found at the end of the section, starting on page 7.

est uncorrected validity coefficient, and .15 correlation points higher than the uncorrected validity coefficient of .40 for the operational composite.

As Table 3 shows, VE + AR is a poor predictor of DAYS: The uncorrected and corrected validity coefficients are -.09 and -.12 respectively. Although the validity coefficients of most of the ASVAB composites are higher than that of VE + AR, not one of these composites is significantly more valid than the operational composite.

The multiple correlation between four ASVAB tests and DAYS is .30. This correlation is only .05 correlation points higher than the highest uncorrected validity coefficient, but it is .21 correlation points higher (in absolute magnitude) than the uncorrected validity coefficient of -.09 for the operational composite.

Correlations of ASVAB predictors with the FINSTAT criterion are presented in Table 4. As shown, the operational composite is a poor predictor of FINSTAT; the uncorrected and corrected validity coefficients are .06 and .07 respectively. Other Navy and alternate composites have higher correlations with FINSTAT than does VE + AR, but none is significantly more valid than the operational composite.

The multiple correlation with FINSTAT based on six tests is .37. This correlation is .23 correlation points higher than the highest uncorrected validity coefficient, and it is .31 correlation points higher than the uncorrected validity coefficient obtained for VE + AR.

An inspection of Table 5 reveals that the operational composite is a poor predictor of TSBPC; the uncorrected and corrected validity coefficients are -.09 and -.11 respectively. Although many other ASVAB composites have higher correlations with TSBPC than does VE + AR, none is significantly more valid than the operational composite.

The multiple correlation between the ASVAB tests and TSBPC, based on five tests, is .32. It is .07 correlation points higher than the highest uncorrected validity coefficient and .13 correlation points higher than the uncorrected validity coefficient of -.09 for the operational composite.

Correlations of ASVAB predictors with the TAR criterion are shown in Table 6. As indicated, VE + AR is a poor predictor of TAR; the uncorrected and corrected validity coefficients are -.05 and -.06 respectively. Most of the other composites are more valid than the operational composite, and nine composites and two tests are significantly more valid than VE + AR.

The multiple correlation for predicting TAR based on four tests is .38. This correlation is .13 correlation points higher than the highest uncorrected validity coefficient, and it is .33 correlation points higher than the uncorrected coefficient of the operational composite (-.05).

Table 7 shows correlations of ASVAB tests and current Navy composites with scores on nine class-administered tests--four tests covering general course

content (referred to as W1TEST through W4TEST in the table) and five tests covering Morse code (referred to as CODE1 though CODE5 in the table). As Table 7 indicates, VE + AR is only moderately predictive of scores on the four tests covering general course content; the mean uncorrected and corrected validity coefficients are .26 and .33 respectively. Several of the other Navy composites have higher mean correlations with the general course content test scores than does the operational composite, but not one is significantly more valid than VE + AR. Similar results were obtained for the code tests; the mean uncorrected and corrected validity coefficients for these five tests are .23 and .36 respectively. While some of the other Navy composites have higher mean correlations with code test scores than does VE + AR, none is significantly more valid than the operational composite.

Although validity coefficients were computed for RCAT against the five criterion measures, RCAT scores were available for only 36 of the 134 students in the sample, thereby limiting confidence in the accuracy of these coefficients. Both RCAT and FSG data were available for only 18 students. Thus, the following results should be evaluated with caution: RCAT is a good predictor of FSG (ru = .62, rc = .63), a result quite different from that found in an earlier study (Foley, 1980), but a poor predictor of DAYS (ru = .01, rc = .00), FINSTAT (ru = .23, rc = .23), TSBPC (ru = -.21, rc = -.22), and TAR (ru = -.06, rc = -.07).

Expectancy Analyses

The results of the expectancy analyses, which were conducted for VE + AR as well as three other experimental composites that appeared promising on the basis of the correlational analyses, are shown in Table 8. Data are presented for the current cutting score or the corresponding cutting score for an experimental composite, as well as for several cutting scores above and below the current one. The table shows the number of recruits, per 1000, expected to qualify for the school, as well as the number of graduates and drops expected at or above the various cutting scores listed.

The expectancy analyses results displayed in Table 8 show that raising the current cutting score of 97 to 102 would not decrease the academic drop rate, which is 29 percent. Raising the cutting score to 105 results in a 2 percent lower academic drop rate (27%) than occurs with the current cutting score.

A comparison of expectancy analyses results for VE + AR and MK + AS indicates that using the MK + AS composite with a cutting score of 93 (which qualifies about the same number of recruits as VE + AR = 97) results in the same academic drop rate (29%) as using the operational composite. Similarly, using the VE + MK + GS composite with a cutting score of 142 results in a 1 percent higher academic drop rate (30%) than occurs with VE + AR = 97. As shown in Table 8, using the AR + MK + EI+ GS composite with a cutting score of 189 results in a 1 percent lower academic drop rate (28%) than occurs with the operational selector.

Table 2

Uncorrected and Corrected Validity Coefficients
of ASVAB Tests and Selector Composites
for Predicting Final School Grade (FSG)

Selector VE + AR = 97 N = 112

Selector Mean 109.21 Criterion Mean 91.55

Selector SD 9.50 Criterion SD 4.92

ASVAB Tests	r_u	r_c	Operational Composites	r_u	r_c	Experimental Composites	r_u	r_c
GS	38	46	VE+AR	40	50	MC+GS+2AS	43	51
AR	31	43	Navy GT			CS+AR+MC+AS	42	50
WK	42	51	VE+MC+AS	43	51	CS+AR+MC+MK	44	52
PC	15	25	Navy MECH			NO+VE+MC+AS	48	56
NO	34	40	AR+MK+EI+GS	48	56	NO+CS+VE+AS	47	54
CS	22	28	Navy ELEC			MK+EI+GS+AS	50	57
AS	39	46	VE+NO+CS	40	48	NO+EI+MC+AS	45	53
MK	42	49	Navy CLER			VE+MK+MC+GS	49	56
MC	33	42	VE+MC	40	49	NO+VE+AS	50	57
EI	33	40	Navy AM			AR+VE+AS	46	54
VE	39	48	AR+2MK+GS	47	54	WK+AR	43	52
AFQT%	46	54	Navy BE/E			WK+MC+AS	45	57
			MK+AS	50	57	WK+NO+CS	42	50
Multiple			Navy BT/EN/MM			AR+MC	37	47
Regression			VE+AR+NO+CS	42	51	CS+VE+AR	39	49
R1 MK	42		Navy CT			MK+EI+AS	48	55
R2+AS	50		VE+MK+GS	50	57	AR+MK+MC	44	52
R3+VE	54		Navy HM			AR+EI+MC	40	49
R4+NO	55		AR+MC+AS	40	49	VE+MK	49	56
			Navy MR			MK+EI	47	54
			VE+AR+MC	41	50	MK+MC+EI	47	54
			Navy SUB			AR+MK	41	50
			MK+EI+GS	49	56	AR+EI+GS	43	52
			Navy ELEC			AR+MK+AS	47	55
			Component			MC+MK+AS	47	55

Note. Decimal points have been omitted. r_u = uncorrected correlation; r_c = corrected correlation.

Table 3

Uncorrected and Corrected Validity Coefficients
of ASVAB Tests and Selector Composites
for Predicting Days to Graduate (DAYS)

Selector VE + AR = 97 N = 92

Selector Mean 109.23 Criterion Mean 71.71

Selector SD 10.16 Criterion SD 10.62

ASVAB Tests	r_u	r_c	Operational Composites	r_u	r_c	Experimental Composites	r_u	r_c
GS	-20	-21	VE+AR	-09	-12	MC+GS+2AS	-20	-20
AR	-04	-08	Navy GT			CS+AR+MC+AS	-14	-15
WK	-09	-11	VE+MC+AS	-18	-19	CS+AR+MC+MK	-14	-15
PC	-15	-17	Navy MECH			NO+VE+MC+AS	-21	-22
NO	-19	-20	AR+MK+EI+GS	-21	-21	NO+CS+VE+AS	-18	-19
CS	-05	-06	Navy ELEC			MK+EI+GS+AS	-24	-24
AS	-17	-19	VE+NO+CS	-15	-17	NO+EI+MC+AS	-24	-24
MK	-14	-16	Navy CLER			VE+MK+MC+GS	-20	-20
MC	-16	-18	VE+MC	-16	-18	NO+VE+AS	-22	-22
EI	-22	-24	Navy AM			AR+VE+AS	-13	-14
VE	-12	-14	AR+2MK+GS	-16	-17	WK+AR	-07	-09
AFQT%	-14	-16	Navy BE/E			WK+MC+AS	-17	-17
			MK+AS	-19	-20	WK+NO+CS	-14	-15
Multiple			Navy BT/EN/MM			AR+MC	-12	-13
Regression			VE+AR+NO+CS	-14	-15	CS+VE+AR	-09	-10
R1 EI	22		Navy CT			MK+EI+AS	-22	-23
R2+NO	26		VE+MK+GS	-20	-20	AR+MK+MC	-15	-16
R3+AR	28		Navy HM			AR+EI+MC	-18	-19
R4+GS	30		AR+MC+AS	-14	-16	VE+MK	-16	-17
			Navy MR			MK+EI	-23	-24
			VE+AR+MC	-13	-15	MK+MC+EI	-23	-23
			Navy SUB			AR+MK	-11	-12
			MK+EI+GS	-25	-25	AR+EI+GS	-21	-21
			Navy ELEC			AR+MK+AS	-15	-15
			Component			MC+MK+AS	-19	-19

Note. Decimal points have been omitted. r_u = uncorrected correlation; r_c = corrected correlation.

Table 4

Uncorrected and Corrected Validity Coefficients of
ASVAB Tests and Selector Composites
for Predicting Final Status (FINSTAT)

Selector VE + AR = 97 N = 128

Selector Mean 109.10 Criterion Mean .72

Selector SD 9.95 Criterion SD .45

ASVAB Tests	r_u	r_c	Operational Composites	r_u	r_c	Experimental Composites	r_u	r_c
GS	-14	-11	VE+AR	06	07	MC+GS+2AS	-07	-04
AR	14	14	Navy GT			CS+AR+MC+AS	00	02
WK	-05	-02	VE+MC+AS	-06	-03	CS+AR+MC+MK	05	07
PC	-04	-02	Navy MECH			NO+VE+MC+AS	-03	00
NO	05	07	AR+MK+EI+GS	-03	00	NO+CS+VE+AS	-03	00
CS	-05	-03	Navy ELEC			MK+EI+GS+AS	-09	-05
AS	-02	00	VE+NO+CS	-02	00	NO+EI+MC+AS	-08	-05
MK	12	13	Navy CLER			VE+MK+MC+GS	-03	00
MC	-04	-01	VE+MC	-06	-03	NO+VE+AS	-01	01
EI	-20	-17	Navy AM			AR+VE+AS	02	04
VE	-08	-04	AR+2MK+GS	08	09	WK+AR	06	08
AFQT%	-01	02	Navy BE/E			WK+MC+AS	-05	-02
			MK+AS	06	07	WK+NO+CS	-02	01
Multiple			Navy BT/EN/MM			AR+MC	05	07
Regression			VE+AR+NO+CS	03	05	CS+VE+AR	01	04
R1 EI	20		Navy CT			MK+EI+AS	-05	-02
R2+AR	29		VE+MK+GS	-03	00	AR+MK+MC	09	10
R3+GS	31		Navy HM			AR+EI+MC	-05	-02
R4+AS	33		AR+MC+AS	02	04	VE+MK	05	07
R5+CS	35		Navy MR			MK+EI	-05	-02
R6+MK	37		VE+AR+MC	01	04	MK+MC+EI	-05	-02
			Navy SUB			AR+MK	14	15
			MK+EI+GS	-09	-05	AR+EI+GS	-10	-05
			Navy ELEC			AR+MK+AS	09	10
			Component			MC+MK+AS	02	04

Note. Decimal points have been omitted. r_u = uncorrected correlation; r_c = corrected correlation.

Table 5

Uncorrected and Corrected Validity Coefficients
of ASVAB Tests and Selector Composites
for Predicting Times Seen by Preventative Counselor (TSBPC)

Selector VE + AR = 97 N = 128

Selector Mean 109.10 Criterion Mean .72

Selector SD 9.95 Criterion SD .45

ASVAB Tests	r_u	r_c	Operational Composites	r_u	r_c	Experimental Composites	r_u	r_c
GS	-12	-14	VE+AR	-09	-11	MC+GS+2AS	-06	-08
AR	-03	-07	Navy GT			CS+AR+MC+AS	-07	-09
WK	-15	-17	VE+MC+AS	-05	-08	CS+AR+MC+MK	-11	-12
PC	00	-03	Navy MECH			NO+VE+MC+AS	-13	-15
NO	-26	-27	AR+MK+EI+GS	-14	-16	NO+CS+VE+AS	-21	-21
CS	-14	-15	Navy ELEC			MK+EI+GS+AS	-13	-15
AS	-07	-09	VE+NO+CS	-24	-19	NO+EI+MC+AS	-13	-14
MK	-14	-15	Navy CLER			VE+MK+MC+GS	-12	-13
MC	00	-03	VE+MC	-05	-08	NO+VE+AS	-20	-21
EI	-13	-14	Navy AM			AR+VE+AS	-08	-10
VE	-13	-15	AR+2MK+GS	-14	-15	WK+AR	-10	-12
AFQT%	-17	-18	Navy BE/E			WK+MC+AS	-06	-08
			MK+AS	-12	-14	WK+NO+CS	-25	-25
Multiple			Navy BT/EN/MM			AR+MC	-01	-04
Regression			VE+AR+NO+CS	-20	-21	CS+VE+AR	-14	-15
R1 NO	26		Navy CT			MK+EI+AS	-13	-14
R2+AR	27		VE+MK+GS	-17	-18	AR+MK+MC	-07	-09
R3+VE	29		Navy HM			AR+EI+MC	-06	-08
R4+MC	30		AR+MC+AS	-02	-06	VE+MK	-16	-17
R5+EI	32		Navy MR			MK+EI	-17	-18
			VE+AR+MC	-05	-08	MK+MC+EI	-11	-12
			Navy SUB			AR+MK	-10	-12
			MK+EI+GS	-17	-18	AR+EI+GS	-12	-14
			Navy ELEC			AR+MK+AS	-10	-11
			Component			MC+MK+AS	-07	-09

Note. Decimal points have been omitted. r_u = uncorrected correlation; r_c = corrected correlation.

Table 6

Uncorrected and Corrected Validity Coefficients of ASVAB Tests and Selector Composites for Predicting Times Assigned Remediation (TAR)

Selector VE + AR = 97 N 92

Selector Mean 109.21 Criterion Mean 8.95

Selector SD 9.50 Criterion SD 9.17

ASVAB Tests	r_u	r_c	Operational Composites	r_u	r_c	Experimental Composites	r_u	r_c
GS	-17	-17	VE+AR	-05	-06	MC+GS+2AS	-07	-08
AR	-01	-03	Navy GT			CS+AR+MC+AS	-07	-08
WK	-07	-08	VE+MC+AS	-05	-06	CS+AR+MC+MK	-15	-15
PC	-12	-13	Navy MECH			NO+VE+MC+AS	-14	-14
NO	-29*	-29	AR+MK+EI+GS	-19*	-18	NO+CS+VE+AS	-21	-21
CS	-17	-17	Navy ELEC			MK+EI+GS+AS	-19	-19
AS	-06	-07	VE+NO+CS	-25*	-25	NO+EI+MC+AS	-14	-14
MK	-25*	-24	Navy CLER			VE+MK+MC+GS	-17	-17
MC	-02	-03	VE+MC	-05	-06	NO+VE+AS	-20	-19
EI	-12	-13	Navy AM			AR+VE+AS	-05	-06
VE	-10	-10	AR+2MK+GS	-21*	-20	WK+AR	-04	-05
AFQT%	-15	-15	Navy BE/E			WK+MC+AS	-04	-05
			MK+AS	-18	-18	WK+NO+CS	-24*	-24
Multiple			Navy BT/EN/MM			AR+MC	-01	-03
Regression			VE+AR+NO+CS	-20*	-19	CS+VE+AR	-12	-12
R1 NO	29		Navy CT			MK+EI+AS	-17	-17
R2 AR	31		VE+MK+GS	-23**	-21	AR+MK+MC	-12	-12
R3 MK	35		Navy HM			AR+EI+MC	-06	-07
R4 GS	38		AR+MC+AS	-02	-04	VE+MK	-22*	-22
			Navy MR			MK+EI	-24*	-24
			VE+AR+MC	-04	-06	MK+MC+EI	-16	-16
			Navy SUB			AR+MK	-16	-15
			MK+EI+GS	-24*	-23	AR+EI+GS	-13	-13
			Navy ELEC			AR+MK+AS	-13	-13
			Component			MC+MK+AS	-12	-12

Note. Decimal points have been omitted. r_u = uncorrected correlation; r_c = corrected correlation. Asterisks indicate tests and composites that are significantly more valid than VE + AR.

*p < .05.
**p < .01.

Table 7

Uncorrected and Corrected Correlations of ASVAB Tests and Current Selector Composites with Scores on Nine Class-administered Tests

ASVAB Predictor	W1TEST N = 92		W2TEST N = 92		W3TEST N = 92		W4TEST N = 92		W1TEST-W4TEST Mean	
	r_u	r_c	r_u	r_c	r_u	r_c	r_u	r_c	r_u	r_c
GS	37	46	15	21	28	37	15	19	24	31
AR	31	43	13	20	19	31	08	14	18	27
WK	41	50	26	31	30	39	18	21	29	35
PC	22	31	11	16	15	23	09	13	14	21
NO	42	47	29	32	35	40	29	31	34	37
CS	38	42	15	18	23	28	13	15	22	26
AS	23	32	20	25	28	35	28	30	25	31
MK	39	47	37	40	42	48	22	25	35	40
MC	21	32	05	12	13	24	20	23	15	23
EI	20	28	16	20	33	38	29	31	25	29
VE	42	51	26	31	28	38	18	21	29	35
AFQT	49	56	29	33	35	44	22	25	34	39
VE+AR	41	51	21	27	27	37	14	19	26	33
VE+MC+AS	30	41	19	25	25	35	25	28	25	32
AR+MK+EI+GS	43	52	28	33	42	49	26	28	35	41
VE+NO+CS	52	59	29	34	37	44	26	28	36	41
VE+MC	32	43	14	21	20	32	21	24	22	30
AR+2MK+GS	45	53	33	36	42	49	21	24	35	41
MK+AS	37	47	36	39	43	49	30	32	37	42
VE+AR+NO+CS	52	59	28	32	36	44	23	26	35	40
VE+MK+GS	49	57	34	37	43	49	23	26	37	42
AR+MC+AS	27	39	15	22	22	33	21	24	21	29
VE+AR+MC	35	46	15	23	22	34	19	22	23	31
MK+EI+GS	43	51	31	35	46	52	30	31	37	42

Note. Decimal points have been omitted. r_u = uncorrected correlation; r_c = corrected correlation.

Table 7 (Continued)

ASVAB Predictor	CODE1 N = 134		CODE2 N = 129		CODE3 N = 128		CODE4 N = 121		CODE5 N = 119		CODE1-CODE5 Mean	
	r_u	r_c	r_u	r_c	r_u	r_c	r_u	r_c	r_u	r_c	r_u	r_c
GS	23	31	12	17	29	38	12	18	31	41	21	29
AR	28	36	18	22	34	44	19	25	33	44	20	34
WK	26	34	06	12	32	42	23	28	38	47	25	33
PC	08	16	09	13	20	29	04	10	22	31	13	20
NO	30	34	18	21	21	27	37	39	17	24	25	29
CS	19	24	11	13	13	20	20	23	08	14	14	19
AS	29	35	13	17	27	35	16	20	37	44	24	30
MK	28	34	29	31	37	45	27	31	39	47	32	38
MC	27	34	17	21	34	43	07	14	46	53	26	33
EI	20	25	09	12	18	25	02	07	25	32	15	20
VE	21	30	06	12	32	43	14	21	36	45	22	30
AFQT	35	42	12	17	32	43	26	30	36	46	22	36
VE+AR	30	38	15	20	39	49	20	26	40	49	23	36
VE+MC+AS	32	39	15	19	37	46	15	21	47	54	23	36
AR+MK+EI+GS	33	40	23	26	39	48	21	26	44	52	32	38
VE+NO+CS	32	38	16	20	28	37	33	36	23	34	26	33
VE+MC	29	36	15	19	38	47	11	18	47	54	28	35
AR+2MK+GS	32	39	27	30	42	50	27	31	44	52	34	40
MK+AS	36	42	26	29	40	48	28	32	48	55	36	41
VE+AR+NO+CS	35	41	19	23	34	44	33	36	30	41	30	37
VE+MK+GS	31	39	22	25	42	50	24	29	45	53	33	39
AR+MC+AS	33	40	19	22	37	47	17	23	46	54	30	31
VE+AR+MC	32	39	18	22	41	50	16	22	47	54	31	37
MK+EI+GS	31	38	22	26	37	46	19	24	43	51	30	37

Note. Decimal points have been omitted. r_u = uncorrected correlation; r_c = corrected correlation.

Table 8

Expectancy Analysis of VE + AR
and Three Experimental Composites
(N = 92 graduates, 36 academic drops, 128 total)

Selector Cutting Score	N Grad	N Acad Drop	N Total	% Grad	% Acad Drop	% At Or Above Cut Score in Recruit Population	Expectancies Per 1000 in Population		
							Total	Grad	Acad Drop
Operational Selector: VE + AR = 97									
≥ 91	92	36	128	72	28	89	890	641	249
≥ 92	91	36	127	72	28	87	870	626	244
≥ 97	90	36	126	71	29	78	780	554	226
≥ 98	85	35	120	71	29	75	750	533	217
≥ 102	61	25	86	71	29	65	650	461	187
≥ 104	56	21	77	73	27	59	590	431	159
≥ 105	56	21	77	73	27	56	560	409	151
Experimental Selector: MK + AS									
≥ 87	83	33	116	72	28	89	890	641	249
≥ 89	78	32	110	71	29	86	860	611	249
≥ 93	71	29	100	71	29	79	790	561	229
≥ 95	67	28	95	71	29	75	750	533	217
≥ 99	56	19	75	75	25	64	640	480	160
≥ 101	49	18	67	73	27	59	590	431	159
≥ 102	48	16	64	75	25	57	570	427	143
Experimental Selector: VE + MK + GS									
≥ 134	88	36	124	71	29	89	890	632	258
≥ 135	88	36	124	71	29	87	870	618	252
≥ 142	80	34	114	70	30	78	780	546	234
≥ 144	79	31	110	72	28	75	750	540	210
≥ 150	68	27	95	72	28	65	650	468	182
≥ 153	64	24	88	73	27	59	590	431	159
≥ 155	57	20	77	74	26	56	560	414	146

Table 8 (Continued)

Selector Cutting Score	N Grad	N Acad Drop	N Total	% Grad	% Acad Drop	% At Or Above Cut Score in Recruit Population	Expectancies Per 1000 in Population		
							Total	Grad	Acad Drop
Experimental Selector: AR + MK + EI + GS									
≥ 178	88	36	124	71	29	89	890	632	258
≥ 180	87	35	122	71	29	87	870	618	252
≥ 189	78	30	108	72	28	78	780	562	218
≥ 191	75	30	105	71	29	75	750	533	217
≥ 199	64	24	88	73	27	65	650	475	175
≥ 203	58	21	79	73	27	59	590	431	159
≥ 205	53	20	73	73	27	56	560	409	151

DISCUSSION

Based on the results of the expectancy and correlational analyses, it appears that the operational composite is a satisfactory predictor of FSG but a poor predictor of the other criterion measures (DAYS, FINSTAT, TSBPC, and TAR). These latter variables are less precise measures of school performance than FSG and, thus, are inherently less predictable. Because FSG is regarded as the primary criterion measure, these correlational results constitute evidence for retaining the operational composite.

Because the analyses conducted in this study were based on small samples, the results should be interpreted with caution. Results of a larger, ongoing validation study, of which CTT "A" school (CDP 6302) is a part (Booth-Kewley, manuscript submitted for publication), provide some relevant supplementary information. Based on a sample size of 259 used in that study, the operational composite was found to be a very good predictor of FSG; it appeared to be more predictive of FSG than was any other ASVAB composite (ru = .60, rc = .68).

The correlational analyses performed between scores on the ASVAB predictors and those on the nine class-administered tests show that the operational composite is only moderately valid for predicting the latter scores; however, none of the other ASVAB predictors is significantly more valid than is VE + AR.

The RCAT appears to be highly predictive of FSG but not predictive of the other school performance measures. The high correlation (ru = .62, rc = .63) between RCAT and FSG is, however, based on a very small sample (N = 18) and is probably spurious. As previously noted, a past validity study of CTT "A" school (Foley, 1980), based on a sample of 260, found RCAT to be a poor predictor of FSG (ru = .18).

Expectancy analyses of the operational composite and three other composites that appeared promising on the basis of the correlational analyses revealed that changing selector composites or raising the cutting score of the operational composite would not appreciably reduce academic attrition.

CONCLUSION AND RECOMMENDATION

The correlational and expectancy analyses indicated that changing the CTT selector composite would not reduce academic attrition. Therefore, the operational CTT composite (VE + AR = 97) should be retained as the ASVAB selector composite for CTT "A" school.

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